MEMORANDUM

Date: May 18, 1999

To: Jane Ross, Deputy Commissioner for Policy

From: Keith Fontenot, Assistant Deputy Commissioner for Policy

Subject: Information on the Distributional Effects of Various Social Security Solvency Options by Gender and Income

The attached tables present estimates of the distributional impacts of various Social Security solvency options, focusing on how women and men and households with different levels of income in retirement would be affected by various possible changes.

Methodology

These tables represent the first results from a two-year ongoing initiative within SSA's Office of Policy to improve SSA's capacity to model the distributional impacts of solvency options. We examined the distributional effects of the solvency options reviewed in the July 1998 report of the Social Security Advisory Board. (See Appendix 1 for more details.) Where possible, we simulated the distributional implications of these program changes using a representative sample of individuals born around 1930 and retiring around 1992. (See Appendix 1 for a listing of options not simulated.)

The results are based on the experience of one historical cohort of Social Security beneficiaries, and show what would have happened to these individuals if they had lived their working lives under a different set of Social Security rules without changing their earnings or retirement behavior. By using data from a sample of actual beneficiaries, we ensure that our estimates reflect the full range of lifetime earnings, marriage, and retirement experience present in the diverse U.S. population.

However, these estimates are imperfect guides to how future Social Security beneficiaries will be affected by any changes we make today. In particular, the proportion of women with substantial labor market experience will be much higher in future cohorts than it is in the cohort that retired in 1992. The Office of the Chief Actuary projects that fully-insured rates for women over age 62 will increase from 67 percent to

89 percent over the next 75 years, and the percentage of women receiving a Social Security benefit based on their spouse's earnings history will fall from 64 percent today to 41 percent in 2075. There are other reasons why the experience of future cohorts is likely to differ from that of 1992 retirees. Changing patterns of marriage and divorce, rising real incomes, the shifting occupational structure of the U.S. workforce, and evolving norms about retirement will all make the experience of future cohorts different from those of the past. Moreover, individuals may change their labor supply, saving, or retirement behavior *in response to* changes in Social Security contribution and benefit rules.

Nonetheless, we believe that future cohorts are likely to be sufficiently similar to past cohorts for the results of the historical cohort model to be relevant in thinking about the distributional implications of possible policy changes. A major research project is underway in SSA's Office of Policy to build a model capable of projecting distributional impacts of policy changes based on different assumptions regarding the future evolution of work, retirement, marriage and saving in the U.S. population. Analyses based on this new model as well as from improved versions of the historical cohort model are under development.

Results

The attached tables provide estimates of the distributional impacts of those solvency options listed in the July 1998 report of the Social Security Advisory Board that our historical cohort model is currently capable of analyzing. When interpreting these results, it is important to be aware of the following. First, the effects of each option are analyzed separately and cannot be interpreted as additive, because interactions would occur between options. Second, these estimates are produced by a historical simulation model using survey data matched with Social Security administrative records. The results depend on, and may be sensitive to, the assumptions underlying the model.

Our measure of the Social Security benefit is the average annual benefit received by an individual throughout his or her retirement years. For example, a married woman may receive spousal benefits as part of a married couple, and then, if she outlives her husband, receive widow benefits until her death. The average lifetime benefit for this woman is calculated to include both the benefits received when she was part of a married couple and the benefits she received as a widow.

The first two tables provide background information on the solvency options and on the characteristics of the cohort of 1992 retirees. Table 1 provides estimates of the effects of

the solvency options on the Social Security Trust Fund. Table 2 shows the distribution of the sample and average annual lifetime benefits under current law by gender and marital status.

The next four tables provide results by gender and marital status. Table 3 and 4 present the impact on an *individual's annual lifetime benefits*, and Table 5 and 6 present the impact on *annual lifetime per capita family benefits*. The first pair of tables counts each spouse in a married couple as receiving his or her own Social Security benefit, while the second pair of tables counts each spouse in a married couple as receiving one half the total benefits received by both members of the married couple. Tables 3 and 5 show the *percentage change* relative to current law in average annual Social Security benefits by gender and marital status for each of the solvency options. Tables 4 and 6 show the *dollar change* relative to current law in average annual Social Security benefits by gender and marital status for each of the solvency options.

Table 7 shows the distribution of the 1930 historical cohort by gender and income in the year after retirement.

Tables 8 and 9 provide estimates of the effects of solvency options on annual benefits relative to current law by income quintile. Table 8 shows the average *percentage change in annual benefits* relative to current law, and Table 9 shows the average *dollar change in annual benefits* relative to current law.

Because increases in the maximum level of earnings subject to the Social Security tax affect both taxes and benefits, Tables 10 and 11 show the *net* effect by including both the additional taxes paid and the additional benefits received, over the beneficiaries' lifetimes, in nominal dollars (where income is measured as per capita household income in the year following retirement.) Estimates in Table 10 are individual-specific, and estimates in Table 11 are family per capita.

One further point is worth noting. On average, Social Security benefits represent a larger share of total income for women than for men and for low-income households than for higher-income households. Therefore, an equal percentage reduction in Social Security benefits for all beneficiaries would result in a larger percentage reduction in total household income for women and low-income households, assuming no offsetting changes in other income sources.

Table 1
Options Considered by the Social Security Advisory Board:
Addressing the Long-Range Solvency Problem

Options[1]	Office of the Chief Actuary Estimates[2]	
	Estimated Change in 75-year OASDI Actuarial Balance	**Percentage of Long-term Deficit Resolved[3]**
COLA Options		
Reduce the COLA by 0.5 percentage points below CPI annually	0.74	36%
Reduce the COLA by 1.0 percentage points below CPI annually	1.43	69%
Computation Years		
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 38	0.23	11%
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 40	0.35	17%
Across-the-Board Reductions		
Reduce benefits across the board by 3 percent	0.37	18%
Reduce benefits across the board by 5 percent	0.62	30%
Raise the Normal Retirement Age		
Raise the Normal Retirement Age to age 68	0.42	20%
Raise the Normal Retirement Age to age 70	0.53	26%
Means Testing Benefits		
Reduce benefits by 10 percent beginning at family income of $40,000 annually and 10 additional percent for each additional $10,000 (maximum reduction of 85 percent)	1.65	80%
Payroll Tax Increases		
Raise payroll tax rates (for employees and employers combined) by 2.2 percentage points	2.15[4]	104%[4]
Raise payroll tax rates (for employees and employers combined) by 2.75 percentage points	2.09[4]	101%[4]
Taxation of Benefits		
Eliminate the special income thresholds for taxing benefits and tax like private pensions (put revenue in the Trust Funds)	0.35	17%
Adjustments to the Tax Max		
Make all earnings subject to the payroll tax (but retain the cap for benefit calculations)	2.02	98%
Make all earnings subject to the payroll tax and credit them for benefit calculations	1.53	74%
Make 90 percent of earnings subject to the payroll tax and credit them for benefit purposes	0.60	29%
Other Options		
Cover all newly hired State and local government employees	0.22	11%
Invest 40 percent of the Trust Funds in stocks	1.00	48%
Transfer money from general revenues to offset the OASDI Trust Fund deficit	Impact on the Trust Fund deficit would depend on the amount transferred.	

[1] Each option could be designed in a variety of ways, with significant variation in outcomes depending on implementation and assumptions. The distributional impacts of each option are analyzed separately. The impacts cannot be interpreted as additive, because interactions would occur between options.

[2] These estimates are based on the intermediate assumptions in the 1999 Social Security Trustees Report.

[3] The percentage of the deficit resolved by each option cannot be interpreted as additive, because interactions would occur between options.

[4] The two payroll tax increases are phased in over different time periods. See Appendix 1 for phase-in periods.

Table 2
Distribution of Historical Cohort by Gender and Marital Status
(1999 Dollars)

Marital Status at Entitlement	Average Annual Lifetime Benefit under Current Law[1]	Percentage Distribution for Total	Percentage Distribution by Gender
Total	$7,107	100.0%	N/A
Women			
Total	$5,794	60.9%	100.0%
Married at entitlement			
While Couple	$4,264	28.7%	47.1%
While Widow	$10,703[2]	11.6%	19.0%
Widowed at entitlement	$5,400	13.6%	22.4%
Divorced/separated at entitlement	[3]	5.2%	8.6%
Never married at entitlement	$7,527	1.8%	2.9%
Men			
Total	$9,156	39.1%	100.0%
Married at entitlement			
While Couple	$9,177	27.0%	69.0%
While Widower	$9,833[2]	3.9%	9.9%
Widowed at entitlement	$9,282	3.1%	8.1%
Divorced/separated at entitlement	[3]	3.4%	8.8%
Never married at entitlement	$8,097	1.7%	4.2%

Note: These estimates are for Old-Age and Survivors' benefits and are simulated using the historical cohort model.

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[1] These are individual-specific benefits.

[2] The average annual lifetime benefit under current law for women married at entitlement who are later widowed is larger than the benefit of men in the corresponding category because of the widow(er)'s limit. The limit protects the widow(er) from the benefit reduction of his/her spouse's decision to retire early. The limit prevents the widow(er) from receiving a benefit at age 62 that is less than 82.5 percent of the deceased spouse's primary benefit.

[3] The historical cohort model does not contain sufficient information about the former spouses of individuals who are divorced or separated at entitlement to allow us to model the impact of the policy changes on these individuals.

Table 3.
Social Security Advisory Board Solvency Options:
Percentage Change in Individual Average Annual Lifetime Benefits Compared to Current Law Benefits
by Marital Status at Benefit Entitlement[1]

| Options[2] | Total | Total | | Married at Entitlement | | | | Widow (er)ed at Entitlement | | Never Married at Entitlement | |
| | | | | While Couple | | While Widow(er) | | | | | |
		Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
COLA Options											
Reduce the COLA by 0.5 percentage points below CPI annually	-6.2	-7.1	-5.4	-4.9	-4.8	-11.0	-9.7	-5.6	-5.2	-5.9	-5.0
Reduce the COLA by 1.0 percentage points below CPI annually	-11.9	-13.5	-10.3	-9.5	-9.3	-20.8	-18.4	-10.7	-10.1	-11.4	-9.7
Computation Years											
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 38	-3.3	-3.7	-2.9	-3.6	-2.8	-3.3	-2.9	-4.3	-3.0	-3.1	-3.6
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 40	-5.6	-6.2	-5.1	-6.1	-4.9	-5.6	-4.9	-7.1	-5.2	-5.5	-6.1
Across-the-Board Reductions											
Reduce benefits across the board by 3 percent	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
Reduce benefits across the board by 5 percent	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0
Raise the Normal Retirement Age											
Raise the Normal Retirement Age to age 68	-6.0	-5.0	-7.0	-6.9	-7.0	-1.3	-6.6	-5.9	-7.1	-7.0	-7.2
Raise the Normal Retirement Age to age 70	-17.0	-13.8	-20.2	-20.3	-20.2	-2.3	-19.1	-16.4	-20.4	-20.3	-21.2
Adjustments to the Tax Max											
Make 90 percent of earnings subject to the payroll tax and credit them for benefit purposes	3	3	3	3	3	3	3	3	3	3	3

Note: These estimates are for Old-Age and Survivors' benefits and are simulated using the historical cohort model.

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[1] The historical cohort model does not contain sufficient information about the former spouses of individuals who are divorced or separated at entitlement to allow us to model the impact of the policy changes on these individuals.

[2] Each option could be designed in a variety of ways, with significant variation in outcomes depending on implementation and assumptions. The distributional impacts of each option is analyzed separately. The impacts cannot be interpreted as additive, because interactions would occur between options.

[3] See Tables 10 and 11 for the *net* change.

Table 4.
Social Security Advisory Board Solvency Options:
Dollar Change in Individual Average Annual Lifetime Benefits Compared to Current Law Benefits (1999 Dollars)
by Marital Status at Benefit Entitlement[1]

Options[2]	Total	Total		Married at Entitlement				Widow (er)ed at Entitlement		Never Married at Entitlement	
				While Couple		While Widow(er)					
		Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
COLA Options											
Reduce the COLA by 0.5 percentage points below CPI annually	-442	-411	-490	-210	-443	-1,182	-950	-301	-487	-445	-409
Reduce the COLA by 1.0 percentage points below CPI annually	-846	-782	-945	-405	-857	-2,226	-1,805	-578	-940	-856	-789
Computation Years											
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 38	-236	-215	-268	-154	-261	-352	-282	-232	-275	-235	-291
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 40	-401	-361	-463	-259	-453	-603	-486	-382	-479	-413	-495
Across-the-Board Reductions											
Reduce benefits across the board by 3 percent	-213	-174	-275	-128	-275	-321	-295	-162	-278	-226	-243
Reduce benefits across the board by 5 percent	-355	-290	-458	-213	-459	-535	-492	-270	-464	-376	-405
Raise the Normal Retirement Age											
Raise the Normal Retirement Age to age 68	-425	-287	-639	-295	-641	-144	-650	-320	-659	-528	-581
Raise the Normal Retirement Age to age 70	-1,209	-799	-1,849	-864	-1,854	-249	-1,876	-885	-1,893	-1,525	-1,716
Adjustments to the Tax Max											
Make 90 percent of earnings subject to the payroll tax and credit them for benefit purposes[3]	3	3	3	3	3	3	3	3	3	3	3

Note: These estimates are for Old-Age and Survivors' benefits and are simulated using the historical cohort model.

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[3] See Tables 10 and 11 for the *net* change.

Table 5
Social Security Advisory Board Solvency Options:
Percentage Change in Average Annual Lifetime Family Per Capita Benefits Compared to Current Law Benefits
by Marital Status at Benefit Entitlement[1]

Options[2]	Total	Total		Married at Entitlement				Widow (er)ed at Entitlement		Never Married at Entitlement	
				While Couple		While Widow(er)					
		Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
COLA Options											
Reduce the COLA by 0.5 percentage points below CPI annually	-6.2	-6.7	-5.5	-4.9	-4.8	-11.0	-9.7	-5.6	-5.2	-5.8	-5.0
Reduce the COLA by 1.0 percentage points below CPI annually	-11.8	-12.7	-10.5	-9.4	-9.3	-20.8	-18.4	-10.7	-10.1	-11.4	-9.7
Computation Years											
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 38	-3.4	-3.6	-3.1	-3.4	-3.1	-3.3	-2.9	-4.3	-3.0	-3.1	-3.6
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 40	-5.6	-6.2	-5.1	-6.1	-4.9	-5.6	-4.9	-7.1	-5.2	-5.5	-6.1
Across-the-Board Reductions											
Reduce benefits across the board by 3 percent	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
Reduce benefits across the board by 5 percent	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0	-5.0
Raise the Normal Retirement Age											
Raise the Normal Retirement Age to age 68	-6.0	-5.4	-7.0	-7.0	-7.1	-1.3	-6.6	-5.9	-7.1	-7.0	-7.2
Raise the Normal Retirement Age to age 70	-17.2	-15.0	-20.4	-20.4	-20.5	-2.3	-19.1	-16.4	-20.4	-20.3	-21.2
Adjustments to the Tax Max											
Make 90 percent of earnings subject to the payroll tax and credit them for benefit purposes	3	3	3	3	3	3	3	3	3	3	3

Note: These estimates are for Old-Age and Survivors' benefits and are simulated using the historical cohort model.

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[1] The historical cohort model does not contain sufficient information about the former spouses of individuals who are divorced or separated at entitlement to allow us to model the impact of the policy changes on these individuals.

[2] Each option could be designed in a variety of ways, with significant variation in outcomes depending on implementation and assumptions. The distributional impacts of each option is analyzed separately. The impacts cannot be interpreted as additive, because interactions would occur between options.

[3] See Tables 10 and 11 for the *net* change.

Table 6.
Social Security Advisory Board Solvency Options:
Dollar Change in Average Annual Lifetime Family Per Capita Benefits Compared to Current Law Benefits (1999 Dollars)
by Marital Status at Benefit Entitlement[1]

Options[2]	Total	Total		Married at Entitlement				Widow (er)ed at Entitlement		Never Married at Entitlement	
				While Couple		While Widow(er)					
	Total	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
COLA Options											
Reduce the COLA by 0.5 percentage points below CPI annually	-447	-471	-410	-332	-329	-1,182	-950	-301	-487	-445	-409
Reduce the COLA by 1.0 percentage points below CPI annually	-857	-899	-791	-642	-636	-2,221	-1,805	-578	-940	-856	-789
Computation Years											
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 38	-245	-253	-232	-232	-209	-$352	-282	-232	-275	-235	-291
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 40	-416	-428	-397	-394	-359	-603	-486	-382	-479	-413	-495
Across-the-Board Reductions											
Reduce benefits across the board by 3 percent	-217	-212	-226	-205	-205	-321	-295	-162	-278	-226	-243
Reduce benefits across the board by 5 percent	-362	-353	-376	-342	-342	-535	-492	-270	-464	-376	-405
Raise the Normal Retirement Age											
Raise the Normal Retirement Age to age 68	-437	-379	-528	-481	-482	-144	-650	-320	-659	-528	-581
Raise the Normal Retirement Age to age 70	-1,245	-1,061	-1,531	-1,395	-1,400	-249	-1,876	-885	-1,893	-1,525	-1,716
Adjustments to the Tax Max											
Make 90 percent of earnings subject to the payroll tax and credit them for benefit purposes	3	3	3	3	3	3	3	3	3	3	3

Note: These estimates are for Old-Age and Survivors' benefits and are simulated using the historical cohort model.

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[1] The historical cohort model does not contain sufficient information about the former spouses of individuals who are divorced or separated at entitlement to allow us to model the impact of the policy changes on these individuals.
[2] Each option could be designed in a variety of ways, with significant variation in outcomes depending on implementation and assumptions. The distributional impacts of each option are analyzed separately. The impacts cannot be interpreted as additive, because interactions would occur between options.
[3] See Tables 10 and 11 for the *net* change.

Table 7
Distribution of Historical Cohort by Gender and Income in Year After Retirement

Income Quintile	Gender Distribution of Each Income Quintile		Percentage Distribution by Gender	
	Women	Men	Women	Men
Total (1999 Dollars)	60.9%	39.1%	100%	100%
Quintile 1				
Under $7,907	66.7%	33.3%	21.9%	17.0%
Quintile 2				
$7,907-$11,893	58.5%	41.5%	19.2%	21.2%
Quintile 3				
$11,894-$16,410	60.1%	39.9%	19.7%	20.4%
Quintile 4				
$16,411-$23,769	59.2%	40.8%	19.4%	20.9%
Quintile 5				
$23,770 or More	60.0%	40.0%	19.7%	20.4%

Table 8
Social Security Advisory Board Solvency Options:
Percentage Change in Individual Average Annual Lifetime Benefits Compared to Current Law Benefits
by Income Quintile

Options[1]	Under $7,907	$7,907-$11,893	$11,894-$16,410	$16,411-$23,769	$23,770 or More
COLA Options					
Reduce the COLA by 0.5 percentage points below CPI annually	-5.2	-5.7	-6.4	-6.6	-6.5
Reduce the COLA by 1.0 percentage points below CPI annually	-10.0	-11.0	-12.3	-12.5	-12.5
Computation Years					
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 38	-4.6	-3.5	-3.2	-3.0	-3.0
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 40	-7.5	-6.0	-5.5	-5.2	-5.1
Across-the-Board Reductions					
Reduce benefits across the board by 3 percent	-3.0	-3.0	-3.0	-3.0	-3.0
Reduce benefits across the board by 5 percent	-5.0	-5.0	-5.0	-5.0	-5.0
Raise the Normal Retirement Age					
Raise the Normal Retirement Age to age 68	-6.7	-6.3	-5.6	-5.6	-6.0
Raise the Normal Retirement Age to age 70	-19.6	-18.4	-16.0	-16.0	-16.7
Adjustments to the Tax Max					
Make 90 percent of earnings subject to the payroll tax and credit them for benefit purposes	[2]	[2]	[2]	[2]	[2]

Note: These estimates are for Old-Age and Survivors' benefits and are simulated using the historical cohort model.

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[1] Each option could be designed in a variety of ways, with significant variation in outcomes depending on implementation and assumptions. The distributional impacts of each option is analyzed separately. The impacts cannot be interpreted as additive, because interactions would occur between options.
[2] See Tables 10 and 11 for the *net* change.

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Table 9
Social Security Advisory Board Solvency Options:
Dollar Change in Individual Average Annual Lifetime Benefits Compared to Current Law Benefits (1999 Dollars)
by Income Quintile

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Options[1]	Under $7,907	$7,907-$11,893	$11,894-$16,410	$16,411-$23,769	$23,770 or More
COLA Options					
Reduce the COLA by 0.5 percentage points below CPI annually	-200	-378	-499	-563	-575
Reduce the COLA by 1.0 percentage points below CPI annually	-384	-726	-955	-1,078	-1,098
Computation Years					
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 38	-176	-232	-249	-261	-262
Increase the number of years used to calculate benefits for retirees and survivors from 35 to 40	-288	-395	-427	-447	-451
Across-the-Board Reductions					
Reduce benefits across the board by 3 percent	-116	-198	-234	-258	-263
Reduce benefits across the board by 5 percent	-193	-330	-389	-430	-439
Raise the Normal Retirement Age					
Raise the Normal Retirement Age to age 68	-258	-417	-438	-485	-530
Raise the Normal Retirement Age to age 70	-756	-1,217	-1,249	-1,373	-1,463
Adjustments to the Tax Max					
Make 90 percent of earnings subject to the payroll tax and credit them for benefit purposes	[2]	[2]	[2]	[2]	[2]

Note: These estimates are for Old-Age and Survivors' benefits and are simulated using the historical cohort model.

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[1] Each option could be designed in a variety of ways, with significant variation in outcomes depending on implementation and assumptions. The distributional impacts of each option is analyzed separately. The impacts cannot be interpreted as additive, because interactions would occur between options.

[2] See Tables 10 and 11 for the *net* change.

Table 10
Average Annual Net Effect of Increasing Maximum Taxable Earnings[1]
(Individual-Specific, 1999 Dollars)

	Average Annual Net Present Value Change[2]
Total	-$33
Women	$38
Men	-$132
Married at Entitlement	
Women	$60
Men	-$140
Widow(er)ed at Entitlement	
Women	$11
Men	-$115
Never Married at Entitlement	
Women	-$15
Men	-$65
Lifetime Earnings Quintile[3]	
Under $11,574	$0
$11,575-$25,479	$0
$25,480-$37,875	-$2
$37,876-$51,917	-$41
$51,918 and More	-$123

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[1] The taxable maximum is increased so that 90 percent of coverable earnings are taxed.
[2] These averages are for all beneficiaries in our sample whether or not they are affected by the increase in the taxable maximum earnings. The average annual net present value change is the difference between the discounted present value of benefits received by the individual and the discounted present value of taxes paid by the individual divided by the number of years working and in retirement.
[3] Based on Average Indexed Monthly Earnings (AIME).

Table 11
Average Annual Net Effect of Increasing Maximum Taxable Earnings[1]
(Family-Per Capita, 1999 Dollars)

	Average Annual Net Present Value Change[2]
Total	-$44
Women	-$30
Men	-$64
Married at Entitlement	
Women	-$32
Men	-$53
Widow(er)ed at Entitlement	
Women	-$38
Men	-$115
Never Married at Entitlement	
Women	-$15
Men	-$65
Lifetime Earnings Quintile[3]	
Under $11,574	$0
$11,575-$25,479	$0
$25,480-$37,875	-$5
$37,876-$51,917	-$59
$51,918 and More	-$158

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[1] The taxable maximum is increased so that 90 percent of coverable earnings are taxed.
[2] These averages are for all beneficiaries in our sample whether or not they are affected by the increase in the taxable maximum earnings. The average annual net present value change is the difference between the discounted present value of benefits received by the individual and the discounted present value of taxes paid by the individual divided by the number of years working and in retirement.
[3] Based on Average Indexed Monthly Earnings (AIME).

Appendix 1

Social Security Advisory Board Solvency Options

COLA Options

- Reduce the COLA by 0.5 percentage point below CPI, beginning in 2000.

- Reduce the COLA by 1.0 percentage point below CPI, beginning in 2000.

Computation Years

- Increase the number of years used to calculate benefits for retirees and survivors from 35 to 38 (phased in 2002-2006).

- Increase the number of years used to calculate benefits for retirees and survivors from 35 to 40 (phased in 2005-2013).

Across-the-Board Reduction

- Reduce benefits across-the-board by 3 percent for those newly eligible for benefits, beginning in 2000.

- Reduce benefits across-the-board by 5 percent for those newly eligible for benefits, beginning in 2000.

Raise the Normal Retirement Age

- Eliminate the hiatus for the currently scheduled increase in the normal retirement age to 67, index the normal retirement age (by 1 month every 2 years) from age 67 up to age 68.

- Eliminate the hiatus for the currently scheduled increase in the normal retirement age to 67, index the normal retirement age (by 1 month every 2 years) from age 67 up to age 70.

Means Testing Benefits[1]

- Beginning in 2000 reduce benefits by 10 percent beginning at family income of $40,000 annually (income level are CPI-indexed after 1995) and 10 additional percent for each additional $10,000 (up to a maximum reduction of 85 percent).

Payroll Tax Increases[1]

- Raise payroll tax rates (for employees and employers combined) by 2.2 percentage points in 2000.

- Raise payroll tax rates (for employees and employers combined) by 2.75 percentage points in 2020 and an additional 2.75 percentage points in 2050

Taxation of Benefits[1]

- Eliminate the special income thresholds for taxing benefits and tax like private pension benefits (put revenue in the Trust Funds).

Adjustments to the Taxable Maximum Wage Base

- Make all earnings subject to the payroll tax (but retain the cap for benefit calculations) beginning in 2000.[1]

- Make all earnings subject to the payroll tax and credit them for benefit calculations beginning in 2000.[1]

- Make 90 percent of earnings subject to the payroll tax and credit them for benefit purposes (phased in 2001-2003).

Other Options

- Cover all newly hired State and local government employees beginning in 2000.[1]

- Invest 40 percent of the Trust Funds in stocks (phased in 2000-2014).[1]

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[1] Not able to simulate these options at this time. Further development of this model is necessary.

- Transfer money from general revenues to offset the Trust Fund deficit.[1]

- Use a portion of the payroll tax (e.g., 2 or 5 percent) to provide mandatory individual investment accounts.[1]

- Allow or require workers to contribute to individual investment accounts funded by additional wages withheld from wages.[1]

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[1] Not able to simulate these options at this time. Further development of this model is necessary.

Appendix 2

The Historical Cohort Model

Social Security reforms may have effects that vary across individuals. To examine the distribution of effects the Social Security Administration has developed a simulation model that calculates payroll taxes and retirement benefits for a sample of workers representing the national population of workers of both sexes, married and unmarried, with all the patterns of individual lifetime earnings that are observed for an actual sample of retirees.

The historical cohort model is a simulation model using the 1930 birth cohort as the basis. The representative sample of 5,000 workers born around 1930 and retiring around 1992 comes from the March 1994 Current Population Survey matched with Social Security records. For each worker in the simulation cohort we observe the earnings history from 1951 on and the date of benefit entitlement (both obtained from Social Security data), as well as the earnings history and date of benefit entitlement for the worker's spouse if the worker were married at retirement. (If the worker were already a widow or widower at the date of benefit entitlement, we also have the earnings history and date of death for the deceased spouse.) In every year, imputed earnings above the taxable maximum replace any earnings that were observed at the taxable maximum.

The earnings histories and date of entitlement are sufficient for calculating payroll taxes and benefits under current law and under many proposed policy options. Each solvency provision is modeled as if it were fully in effect for the entire life span of the 1930 birth cohort. While the results show the effects on a population of actual workers, it is important to keep in mind that the simulation results for the 1930 birth cohort are indicative of what the distributional effects of solvency proposals would be in the future but are not exact since the labor force behavior and marriage patterns of the 1930 birth cohort are different from those of workers born later.

Each worker's annual benefits are calculated through the retirement period, with probabilities of survival to each age determined according to Social Security projections of mortality. For couples, three streams of annual benefits are calculated: those payable while both members are alive; those payable if only the husband survives; and those payable if only the wife survives. These triple calculations are necessary for examining the effects at older ages of solvency options that would affect spouse or widow benefits. Throughout the analysis, benefits refer to annual benefits averaged over the individual's lifetime and discounted to

reflect the probability of survival and the time value of money.
For example, for a women who is married at entitlement, average lifetime benefits would include the benefits received while she is married and the benefits received after she becomes widowed.